



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,440	12/08/2003	Chandra Sekhar Namuduri	GP-303152	2250

7590 01/11/2006

KATHRYN A MARRA
General Motors Corporation
Legal Staff, Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER

BURCH, MELODY M

ART UNIT	PAPER NUMBER
----------	--------------

3683

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/730,440	Applicant(s) NAMUDURI, CHANDRA SEKHAR	
	Examiner Melody M. Burch	Art Unit 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 5,10,15,17 and 28 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19,23,30 and 32 is/are allowed.
- 6) ☒ Claim(s) 1-4,6-9,11-14,16,18,20-22,24-27,29,31 and 33-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/12/05 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

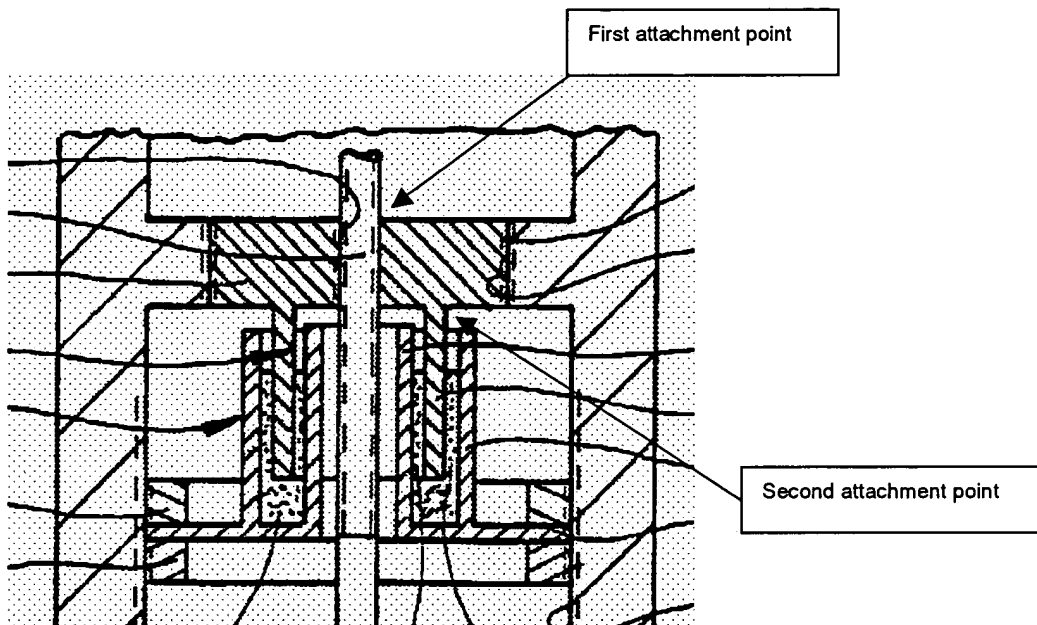
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-9, 11-14, 16, 18, 20-22, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4946131 to Weyand in view of US Patent 5878997 to Miesner.

Re: claims 1, 2, 7, and 12. Weyand shows in figure 2 a damping apparatus comprising: a linear to rotary conversion mechanism comprising a translatable member 34 having a first attachment point as shown in the labeled version of figure 2 of Weyand shown on the following page that is adapted for generally linear translation in a forward and a reverse direction and a rotatable member 34 comprising a rotatable shaft that is

Art Unit: 3683

rotatably coupled to the translatable member; wherein translation of the translatable member in one of the forward or the reverse directions produces a forward or a reverse rotation of the rotatable member and shaft, respectively, and a damping mechanism comprising a second attachment point as shown in the labeled version of figure 2 of Weyand, a hub 32 that is fixed to the shaft.



Weyand includes the limitation of damping by movement of the hub 32 through a viscous fluid 42 and discloses changing the viscosity of the fluid in col. 3 lines 4-5, but does not include the limitation of a means for generating a single electromagnetic field in response to an applied electrical signal that may be continuously varied in response to an input signal that is representative of a desired damping force and a fluid having a viscosity that may be continuously varied by application of the electromagnetic field that is in touching contact with the hub, wherein application of the variable electromagnetic

field to the fluid produces changes in the viscosity of the fluid that in turn provides variable resistance to rotation of the hub and translation of the translatable member.

Miesner teaches in figure 1 the use of a damper having a hub 40 and a means for generating a single electromagnetic field in response to an applied electrical signal that may be continuously varied in response to an input signal representative of a desired damping force and a fluid 35 that is in touching contact with the hub wherein application of the variable electromagnetic field to the fluid produces changes in the viscosity of the fluid that in turn provides variable resistance to rotation of the hub and translation of the translatable member as taught in lines 5-7 of the abstract and in col. 4 lines 38-48.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the damping apparatus of Weyand to have included an automatic means of providing variable resistance to the movement of the hub, as taught by Miesner, in order to provide a means of adjusting the damping characteristics of the damper apparatus without manually altering the mechanical structure of the apparatus.

Re: claims 3, 8, 13, and 24. Weyand, as modified, teaches in Miesner the limitation wherein the means for applying an electromagnetic field is a coil as taught in col. 6 lines 1-4 of Miesner that is located proximate the hub as shown in figure 1 of Miesner and MR fluid as taught in lines 1-2 of the abstract of Miesner (the cylindrical disk in claims 24 and 33 is the cylindrical bottom surface of element 32).

Re: claims 4, 9, and 14. Weyand, as modified, teaches in figure 2 of Weyand a translatable member 34 (34 undergoes a slight axial movement as disclosed in col. 2 lines 61-62 and a rotatable member 10 (member capable of being rotated along the threads) comprises a ball screw.

Re: claims 6 and 11. Weyand, as modified, describe the invention as set forth above in the rejection of claim 1 and also includes (as shown in figure 2 of Weyand) a housing 14 having a first end shown in the area of the lead line of number 48 with a bore that is adapted to rotatably receive the shaft therethrough, a sidewall 30 having an inner surface and a second end opposite the first end, the hub 32 having an outer surface proximate a portion of the inner surface of the sidewall such that the outer surface of the hub and sidewall of the housing define a channel therebetween as shown in figure 2 of Weyand.

Re: claim 16. Weyand, as modified, teach in figure 2 of Weyand the limitation wherein the hub comprises a cylindrical base (the upper part of the hub) having an outer rim and that is fixed to the shaft (integrally fixed) and a cylindrical wall (the lower part of the hub) extending from the outer rim and located adjacent to the inner surface of the sidewall of the housing, wherein a first portion between the sidewall of the housing and the cylindrical wall of the hub comprises the channel.

Re: claims 18 and 22. Weyand, as modified, teaches in Miesner, the limitation wherein the cylindrical base or upper portion of the hub (where the coil 120 is not located) comprises a non-magnetic material (interpreting the absence of the coil as not

having a magnetic material) and the cylindrical wall or lower portion of the hub comprises a magnetic material (where the coil 120 is located).

Re: claim 20. Weyand, as modified, teaches in Weyand the damper further comprising a cylindrical core 20 attached to the second end of the housing and extending along and adjacent to the cylindrical wall of the hub wherein a second portion between the cylindrical wall of the hub and the cylindrical core further comprises the channel as shown in figure 2.

Re: claim 21. Weyand, as modified, teaches in Miesner the limitation wherein the core 50 has a recess in an outer surface and the coil 120 is located within the recess. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the core of Weyand to have included a recess with a coil, as taught by Miesner, in order to provide a means of ensuring that the electromagnetic field reaches the channel to change the viscosity of the fluid.

4. Claims 25-27, 29, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4946131 to Weyand in view of US Patent 5878997 to Miesner as applied to claim 11 and further in view of US Patent 6740125 to Mosler.

Re: claims 25. Weyand, as modified, describes the invention substantially as set forth above, but does not include the limitation of the fluid being an ER fluid.

Mosler teaches in col. 4 line 5 the limitation of a damper including ER fluid. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fluid in the damper of Weyand, as modified, to have

been ER fluid, as taught by Mosler, in order to provide an alternate means of varying the resistance within a damping system by altering the fluid viscosity.

Re: claim 26. Weyand, as modified, teach in col. 4 of Mosler the use of electrodes 12.

Re: claim 27. See the rejection of claim 14 above.

Re: claim 29. See the rejection of claim 16 above.

Re: claim 31. See the rejection of claim 20 above.

Re: claim 33. See the rejection of claim 24 above.

5. Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4946131 to Weyand in view of US Patent 5878997 to Miesner as applied to claim 1 above, and further in view of US Patent Application 2003/0030523 to Bell et al.

Weyand, as modified, describes the use of a linear damping arrangement capable of being operated between and sprung and unsprung mass, but lacks the limitation of the sprung mass specifically being a chassis and the unsprung mass being a wheel and axle.

Bell et al. teach in the figure on the front of the publication the use of a linear damping arrangement 18 in which the sprung mass is a vehicle chassis 50 and the unsprung mass is a wheel and axle 26 and the axle portion shown above element 80.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the damping arrangement of Weyand, as modified, to have been utilized in the environment of chassis sprung mass and a wheel

Art Unit: 3683

and axle unsprung mass, as taught by Bell et al., in order to provide a means of improving the feel of the ride of a passenger in a vehicle.

Allowable Subject Matter

6. Claims 19, 23, 30, and 32 are allowed.

Response to Arguments

7. Applicant's arguments filed 10/19/05 have been fully considered but they are not persuasive.

Applicant has amended the preamble of claim 1 to define an apparatus "operable to provide damping between a sprung mass and an unsprung mass." Examiner notes that the added phrase serves as functional language. Examiner further notes that Weyand, as modified, describes an arrangement for damping linear movement. It is maintained that an arrangement for damping linear movement is capable of providing (or operable to provide) damping between a sprung mass and an unsprung mass wherein a sprung mass may be connected to the element of the arrangement that moves axially and the unsprung mass may be connected to the housing of the arrangement. Accordingly, as broadly and functionally recited, the rejections to the claims have been maintained.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 571-272-7114. The examiner can normally be reached on Monday-Friday (6:30 AM-3:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James McClellan can be reached on 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/730,440

Page 10

Art Unit: 3683

mmb

January 9, 2006

Melody M. Burch
Melody M. Burch
Primary Examiner
Art Unit 3683

1/9/06